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AN OBSTINATE CASE OF PURPURA  
HEMORRHAGICA.

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**AN OBSTINATE CASE OF PURPURA HEMOR-  
RHAGICA.**

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THE patient, Susie C., aged fourteen, a blonde, of Irish parentage, weighed at the commencement of her illness 125 pounds. Her mother and father had always been healthy, but the latter's brother had died from the effects of excessive loss of blood from a very slight scalp wound, the hemorrhage, it was said, having been uncontrollable.

The patient had been apparently strong and well-nourished up to the age of seven years, when she was suddenly attacked by epistaxis, the hemorrhage, I am told, being excessive and demanding repeated post-nasal plugging for several days. The physician in charge, Dr. Barton of Clyde, N. Y., informs me that the attack began with a pronounced chill, and that at the end of the third day purpuric spots appeared on the child's leg and abdomen. She recovered from this attack and remained in good health until September 7, 1886, when, without premonitory symptoms another attack was ushered in by a severe chill, followed by high fever, her temperature at 9 A.M. being 105° F. and her pulse 150, very weak and feeble.

On September 8th her temperature was 100° F. and her pulse 120. The following day her temperature was normal and she felt fairly well and seemed to be in a fair way toward a rapid recovery, but on September 11th she again had a very severe chill which was followed by high fever, her temperature reaching 105° F. This was followed by sweating and a reduction of temperature. During the sweating stage an oozing of blood from the mucous membrane of the gums and mouth occurred,

which was controlled with considerable difficulty by strong, astringent mouth-washes. The next morning, September 12th, she was unable to retain nourishment, the ejections from the stomach being mixed with blood. Nausea and vomiting then became a constant symptom, each ejection containing blood. During the evening of the same day hematuria developed, the urine being scanty, smoky, and containing one-half of one per cent. of albumin and granular and epithelial casts and blood. The next day her condition remained about the same, her maximum temperature being 103° F. and pulse 160, the latter very weak but steady.

On the 13th her condition was much better; the vomiting had ceased but the urine was still bloody and contained albumin and epithelial and granular casts. Her maximum temperature was 100° F. and pulse 100 and stronger. During the night she was bathed in a cold, clammy perspiration, and a marked jaundice manifested itself. The sclerotics were yellow, as were also the face and neck. I also noticed for the first time purpuric spots on the left arm and ankle.

On September 14th her general condition was better, the icterus and hematuria being less pronounced, but the purpuric spots were beginning to appear on her abdomen. At three o'clock in the afternoon I was called in great haste and found her nearly exsanguinated, there being a profuse hemorrhage from the left nostril. The nostril was immediately plugged with iodoform gauze, which controlled the bleeding. The next day she was much better. The hematuria was disappearing, albumin was present to the amount of  $\frac{1}{4}$  of 1 per cent., but there were no more casts. On September 16th I removed the tampon from the nostril but as this was followed by excessive hemorrhage another was introduced. On September 18th I again removed the tampon from the nostril but the hemorrhage was again excessive, demanding re-

plugging. On September 19th the purpuric eruption disappeared and her general condition was much better, her temperature being normal and her pulse 90 and stronger. On the following day I again removed the tampon from the nostril, but the hemorrhage was so profuse that I at once replugged it, using strips of sterilized gauze saturated with a 20-per-cent. solution of antipyrin. On September 22d I once more removed the tampon and no hemorrhage followed. She made a good recovery and remained apparently well until February 5, 1898, when, without premonitory symptoms she had a severe chill which was followed by well pronounced fever and sweating.

On February 6th she felt fairly well, but on the following morning she was again stricken with a severe chill, followed by a profuse hemorrhage from the left nostril. I was hastily called and found her in a state of collapse. Her pulse was scarcely perceptible and was weak and thready. The extremities were cold and bathed in a clammy perspiration. I immediately plugged the nostril, both anteriorly and posteriorly, with gauze, but the blood continued to ooze drop by drop. I then removed the tampons and replaced them very carefully with tampons of absorbent cotton, saturated with 1 to 1000 bichlorid-of-mercury solution. The plugs were carried far back into the posterior nares and the whole nostril was very firmly packed. This controlled the hemorrhage, and it was indeed time, as the patient was rapidly sinking. By the aid of heat and stimulants, hypodermically administered, she gradually revived and when I left her temperature was 99° F. and her pulse 160, very weak and compressible.

During the profuse hemorrhage I collected about ten cubic centimeters of blood as it flowed from the nostrils, and fully verified the observations of Hayem, which were afterward confirmed in sixteen cases reported by Beau-

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<sup>1</sup> *Semaine Medicale*, June 20, 1897.

saude<sup>1</sup> of Montpellier, in regard to the non-retractibility of the clot and the formation of serum. The blood in this case, as in the greater number of the graver cases reported by Beusaude, showed no tendency whatever to clot but remained entirely fluid.

At 3.30 in the afternoon I was again hastily called and found the patient bleeding profusely from the right nostril, which I was also obliged to plug in order to control the hemorrhage. On February 8th, she had a pronounced chill, her feet, legs, and hands being icy cold. The chill continued twenty minutes, her temperature then rising to 105° F. During the night she slept somewhat and was bathed in perspiration. She vomited a little blood, which was thick and of a dark color. The area of hepatic dulness had not increased, nor had that of the spleen. The urine was of a dark color, the specific gravity being 1028. The reaction was distinctly acid. Carefully centrifugalized sediment revealed only a few crystals of uric acid and squamous epithelium. I pierced a lobe of the ear to obtain a drop of blood for examination, and a small stream issued forth from the puncture, which was so difficult to control that I was obliged to apply a compress of styptic cotton for more than half an hour. A microscopic examination of several specimens of fresh blood for the plasmodium malariae revealed nothing suspicious. A blood-count (Toma Zeisse) showed the number of red blood-corpuscles to be 3,800,000 per cubic millimeter, and the leucocytes, 10,000 per cubic millimeter, the increase being manifested mostly in regard to the polymorphonuclear cells; hemoglobin was thirty-five per cent. A dried specimen, stained after the method of Ehrlich, revealed simple anemia, both red and white cells being fairly normal in appearance. During the afternoon of that day her temperature was 104° F., and her pulse about 180, but so weak and rapid that it was very difficult to count it accurately. The heart sounds

were distinct. The bowels moved five times during the day, the ejections being of a thin, brownish character. There was some ileocecal gurgling. Nothing could be retained in the stomach except Valentine's beef-juice, only a few drops of which could be given at a time. The drugs employed at this time were strychnin sulphate,  $\frac{1}{30}$  of a grain every four hours, and 10 minims of aromatic sulphuric acid every three hours.

On February 9th her temperature was  $101^{\circ}$  F., and the pulse 150, the latter weak but regular. The coating of the tongue was dry and brownish. The bowels had moved but twice during the night, and she had vomited but twice. Some sleep had been obtained, and her general appearance was improved. The area of splenic dulness was increased, and the urine was clear and dark-brown in color, and contained a trace of albumin and epithelium. The blood-count showed the red cells to be 3,500,000 per cubic millimeter; white cells 12,000 per cubic millimeter; hemoglobin 35 per cent. The stained specimens began to show slight poikilocytosis and the Maragliano reaction. The nuclei of the white cells showed evidence of fragmentation. The Widal-Johnson reaction was negative. The bowels moved twice that day, and she vomited but once, and retained beef-juice in larger quantities. The tampons were removed from the nostrils, which resulted in excessive hemorrhage, demanding immediate replugging.

On the morning of the 10th her temperature was  $101^{\circ}$  F. and pulse 120. She had slept fairly well. The menses appeared that morning but were not at all profuse. The urine was of a dark-brown color, the specific gravity being 1028. It contained one-half of one per cent. of albumin, and a small amount of epithelium. The blood-count was: red cells, 3,400,000 per cubic millimeter, and white cells, 12,000 per cubic millimeter. Stained specimens showed distinct poikilocytosis; there

were also distinct degenerated changes within the nuclei of the polymorphonuclear cells. At 5 o'clock in the afternoon her temperature was  $103.5^{\circ}$  F., and pulse 160, the latter being weak and compressible. The bowels had moved twice, the ejections consisting of thin, brownish liquid, and there was ileocecal gurgling. The Widal-Johnson test was negative. She had vomited three times, and her general appearance was bad.

On February 11th her temperature was  $101^{\circ}$  F. and pulse 120, very weak but regular. The heart-sounds were normal. The spleen was distinctly palpable. There were no bowel movements during the night and she appeared better. The urine was dark and smoky, the specific gravity being 1025. There was a strongly acid reaction. The urine contained one half of one per cent. of albumin; the chlorids were normal, but there was an increase in the phosphates. The Ehrlich diazo-reaction was marked, the foam being distinctly red. Centrifugalized sediment showed an increased number of blood-cells, granular and epithelial casts, and very peculiar bacilli about as long as a colon bacillus, but thicker and non-motile. The blood count showed the red cells to be 3,300,000 and the white cells 13,000 per cubic millimeter, the increase being both in regard to the small mononuclear and the polymorphonuclear variety of leucocytes. There was a marked poikilocytosis, the red cells being deformed and with distinct polychromatophilic changes. The appearance of the white cell was very peculiar and the polymorphonuclear cells appeared distorted in shape. The cell-wall was broken in places and the protoplasm was apparently filled with granules which seemed to be exuding from the broken cell-wall. The nuclei were fragmented, taking the stain badly, and in close proximity to the cells were clusters of fine granular bodies which were very indistinct. Within the red cells were bodies not having the appearance of nucleated cells or



of the plasmodium malariae. Several cover-glass preparations were then stained after the method of Romonovski.<sup>1</sup> This brought out these bodies more distinctly, and also revealed groups of bacilli similar in appearance to those found in the urine. The bodies were about one-quarter the size of a red blood-cell, and were stained a deep blue and were round in shape. The staining qualities differed from the hematozoon of malaria from the fact that each body was deeply and regularly stained, and also from the fact that they were outside the red cells in exactly the same regular form, being found in groups of from two to three in the immediate proximity of a polymorphonuclear leucocyte. These bodies were similar, I should judge, to those described by Dr. Deney<sup>2</sup> in the case of a woman who had suffered from obscure gastric symptoms and in whom a few days before her death, hemorrhagic spots appeared on the mucous membrane of her fauces, vagina, and on the skin. A careful examination of several fresh specimens of blood failed to reveal the plasmodium malariae or the motile granules described by Müller. The blood was carefully examined for blood plaques, with negative results, none being found during the entire course of her illness. During the afternoon of that day the patient had a very slight chill. I again removed the tampon but the profuse hemorrhage demanded immediate plugging of both nostrils.

On February 12th her temperature was 105.5° F. and pulse 120, weak and compressible. The bowels had moved once during the night, the ejection being thin, watery, and offensive. Nausea and vomiting had ceased. Through the night there was considerable hemorrhage, the blood oozing from the mucous membrane of the gums and posterior nares, and also from the nose, the

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<sup>1</sup> A saturated solution of methylen-blue and a one-per-cent. solution of aqueous eosin.

<sup>2</sup> *Indiana Medical Gazette*.

plugs not entirely controlling the hemorrhage. I again removed the tampons from the nostrils and the hemorrhage was very profuse. I repacked both nostrils with absorbent cotton saturated with a solution of acito-tartrate of aluminium. This controlled the nasal hemorrhage but a slight oozing of blood continued from the mucous membrane of the gums. Menstruation had ceased and the urine remained the same except that it contained more blood. For the purpose of isolating the bacilli several large test-tubes were carefully sterilized. A catheter was then employed under strict aseptic precautions and about fifty cubic centimeters of urine were thus obtained. The urine was very clear in color, decidedly acid in reaction, and contained one-half of one per cent. of albumin; the specific gravity was 1028. It was then centrifugalized in sterile tubes, the sediment revealing hyalin and granular casts, also an immense number of red blood-cells, and the peculiar bacillus above mentioned. Immediately after obtaining the urine I inoculated a tube of nutrient gelatin, one of agar-agar, one of potato, and also one of bouillon, all of which were transferred to an incubator, except the gelatin which was transferred to a Petri dish and allowed to develop at room temperature. At the time I also thoroughly sterilized the flexor-bend of the elbow, using the most rigid aseptic precautions, and drew from a distended vein about two cubic centimeters of blood with which I inoculated a second series of the above-mentioned tubes. The blood-count was as follows: Red cells, 3,200,000 per cubic millimeter; white cells, 14,000 per cubic millimeter; hemoglobin, 35 per cent. The morphological appearances were unchanged. After my experience in piercing the lobe of the ear to obtain blood for examination I employed the finger-tip which gave me no trouble. During the day blood continued to ooze from the mucous membrane of the gums and from

the cavity from which a bicuspid tooth had been removed.

On February 13th her temperature was 101.5° F., and pulse 120. She had a slight chill at 7.30 in the morning. The bleeding had continued all night from the mucous membrane of the gums, the roof of the mouth, and posterior nares. The blood-count per cubic millimeter was 3,100,000 red cells; 12,500 white cells; hemoglobin, thirty per cent.

After remaining in the incubator twenty-four hours the bouillon remained clear, but a cover-glass preparation revealed the same bacilli, and a hanging drop proved them to be non-motile. Upon the agar-agar there was a thin layer with smooth edges. There was nothing upon the potato or gelatin. The bacilli stained readily with Loeffler's methylen-blue and carbo-fuchsin, but were very poorly stained by Gram's method. The bacilli appeared in pairs, and were non-motile. At the end of forty-eight hours a thin hyalin growth appeared upon the gelatin, and a thin strip upon the potato. The results were exactly the same from the tubes inoculated with both blood and urine. I injected 1 cubic centimeter into the abdominal tissue of a rabbit. At the end of twenty-four hours the animal appeared sick and would not eat, and at the end of seventy-eight hours it died. An autopsy revealed hemorrhagic extravasation in the subcutaneous tissue, also in the peritoneum and pleura, and extravasation was also found in the ear muscles. The blood showed no tendency to coagulate, and cultures from the spleen, blood, and liver revealed the same organism. The appearance, behavior, and pathogenic characteristics closely resembled the bacillus of purpura hemorrhagica described by Kolb in 1891.

On February 14th the patient's temperature was 102.5 F., and pulse 140, the latter being very weak and compressible. The heart sounds were clear and distinct,

and the spleen was distinctly palpable. The hemorrhage continued from the mouth, and there was considerable oozing from the nose. I repacked the nostrils, which operation greatly fatigued the patient, as the nose was very much inflamed from constant pressure. Upon removing the tampons the hemorrhage was as profuse as ever. The blood-count per cubic millimeter was: Red cells 2,300,000, and white cells 10,300. The poikilocytosis was, perhaps, more marked. There was an occasional nucleated red cell, and the same round, deeply stained bodies as before.

On the following day, the 15th, she vomited some blood. The examination of the blood showed the red cells to be 2,100,000 per cubic millimeter; white cells, 14,000 per cubic millimeter; hemoglobin, thirty per cent. The diazo reaction was still marked, as it had been each day from its first appearance. For the first time purpuric spots made their appearance on the legs and back. The patient was very weak and in a semicomatose condition. The left side of the nose and left eyelid were badly swollen and very painful. The bowels had not moved during two days, and she had a chill at 12.30 o'clock. On February 16th her temperature was 99.5° F., and pulse 130 and much stronger. The heart sounds were distinct, and the purpuric spots were increasing. The left eyelid and side of the nose were badly swollen and discolored. I repacked the nostrils, profuse hemorrhage following the removal of the tampons. On the 17th her temperature had risen to 102.2° F., and the pulse was 140, very weak but regular. The patient was able to retain beef-juice, milk, and small doses of brandy. The nose was still badly swollen and ecchymosed. The urine did not contain albumin, but still contained granular and hyalin casts. The blood-count was: Red cells, 2,300,000 per cubic millimeter; white cells, 12,200 per cubic millimeter; hemoglobin, thirty-five per cent. The poikilocy-

tosis was still marked. The nucleated red cells were not present, but the small, round bodies were still observed, and also the same degenerated condition of the leucocytes.

On February 18th her temperature was 101° F., and pulse 120, and stronger. There was less hemorrhage from the mouth and nose, but the removal of the tampons resulted as before. There was a disagreeable odor from the nose, notwithstanding the fact that strict antiseptic precautions were observed. The swelling of the eyelids and side of the nose was increasing. A free incision disclosed the presence of thin, ichorous pus and necrosis of the nasal bones and of the nasal process of the superior maxillary bones. The necrosed portions of bone were removed, and the wound packed with iodoform gauze. The blood count per cubic millimeter was: Red cells, 2,400,000; white cells, 12,000; hemoglobin, thirty-seven per cent.

On the following day her temperature fell to 99.5° F., her pulse being 140, and very weak. The spleen was still distinctly palpable. The urine was of a clear straw-color, and did not contain albumin; the specific gravity was 1020. The diazo reaction was absent for the first time. Indican was also absent, this having been present part of the time during her illness, but not as a constant constituent. The blood-count revealed red cells, 2,100,000 per cubic millimeter; white cells, 14,000 per cubic millimeter; hemoglobin, thirty-two per cent. There was still present a marked poikilocytosis, the cells varying both in size and shape. The peculiar round bodies were still seen, but were not so numerous; the small mononuclear leucocytes greatly predominated over the polymorphonuclear variety. The character of the latter was very different, they being much smaller in size, with cell-wall and nuclei of normal appearance. I removed the tampons from the nose again, with less resultant hemorrhage, and

examination revealed necrosis of the lower turbinate body of the left side, which was readily detached and removed. Both nostrils were irrigated with a 1 to 2000 bichlorid-of-mercury solution, and the tampons replaced.

On February 20th her temperature was 102.6° F. Purpuric spots appeared upon the chest, abdomen, and leg, and also behind one ear. I removed the tampons for the first time without hemorrhage. The wound on the side of the nose was doing nicely. The blood-count was: Red cells, 1,000,000 per cubic millimeter, and white cells, 13,000 per cubic millimeter. An examination of stained specimens showed profound anemia. There were several nucleated red cells, and the Maragliano reaction was marked. There were also many of the small, round bodies before mentioned. The appearance of the leucocytes was fairly normal. The urine was normal, there being neither albumin nor casts present, and the diazo reaction was absent.

On the 21st her temperature had risen to 104° F., and the pulse to 150. The heart sounds were weak but distinct. The skin was bathed in cold perspiration, and the general appearance was very bad. The urine contained a slight trace of albumin, and the bacilli, which had been absent for several days, again manifested themselves. Indican was also present, and the diazo reaction was again marked. The blood count was as follows: Red cells, 2,000,000 per cubic millimeter; white cells, 12,500 per cubic millimeter; hemoglobin, thirty per cent. The condition of the blood remained about the same, except that the bacilli had again made their appearance, being grouped together in pairs. At 12.30 o'clock she had a slight chill. On February 22d her temperature was reduced to 99.5° F., and pulse was 140. She had rested fairly well through the night, and her general appearance was better. The swelling of the side of the nose and of the eyelid had disappeared, and there was no more

hemorrhage from the nose. The urine was again normal, containing neither bacilli, casts, nor albumin. The diazo reaction and indican were still absent. The following was the blood-count per cubic millimeter: Red cells, 3,800,000; white cells, 13,500.

From that time on the condition of the patient very gradually improved. The blood-count revealed an increase in number of red cells from day to day, and the character and appearance of the cells changed for the better. The leucocytosis diminished also, the small mononuclears greatly predominating. The purpuric spots gradually disappeared, and on the 26th of March I saw her for the last time, she being at that time convalescent. She is now a well and healthy girl.

The treatment in this case consisted of the administration of strychnin sulphate, which I used as soon as asthenia became manifest. I began with  $\frac{1}{60}$  of a grain, and increased to  $\frac{1}{30}$  of a grain, every three hours. For the hemorrhagic condition I employed aromatic sulphuric acid, 10 minims every three hours, and ergotin,  $\frac{1}{4}$  of a grain every three hours. For the impoverished blood state I used arsenic in the form of Fowler's solution, 2 minims every three hours, and after the degenerated condition of leucocytes became so marked I prescribed nuclein (Auld's), one tablet every two hours. This, with small doses of brandy at times, as indications for its use arose, comprised the treatment throughout the case. I will here mention that after prescribing nuclein for thirty-six hours I detected a difference in the appearance of the polymorphonuclear cells. They increased in number, were of smaller size, and the degenerated condition, which had before been present, gradually disappeared. Still, it is difficult to assure one's self that this result was brought about by the nuclein, and I mention it only for the reason that the drug was prescribed, and the change became manifest after its exhibition.

